

MACC Quarterly

Quarterly Magazine of the Massachusetts Association of Conservation Commissions

Winter 2016

**NOAA Releases New Rainfall
Atlas for Massachusetts**

**How Conservation Commissions
Can (and Should) Regulate Land
Subject to Coastal Storm Flowage**



ANNUAL ENVIRONMENTAL CONFERENCE 2016 ISSUE

MACC QUARTERLY

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Contents

<i>President's Message</i>	3
<i>From the Director's Desk</i>	4
<i>DEP Issues New Snow Disposal Guidance</i>	5
<i>Congratulations Fundamentals Graduates</i>	7
<i>NOAA Releases New Rainfall Atlas for Massachusetts</i>	8
<i>How Conservation Commissions Can (and Should) Regulate Land Subject to Coastal Storm Flowage</i>	9
<i>Annual Environmental Conference 2016</i>	10-18
<i>Advocacy Update</i>	19
<i>Here are the Latest "Rock Stars" of Land Conservation</i>	22
<i>Tips from the Conservation Commission Office</i>	25
<i>The Community Preservation Act: What Your Conservation Commission Needs to Know</i>	26
<i>Environmental Handbook Tips for Success</i>	27
<i>Fundamentals for Conservation Commissioners Webinars</i>	28
<i>Nominations for MACC Officers and Board of Directors</i> ...	29
<i>Essential Resources for Conservation Commissions</i>	30

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President's Message

As the last leaves fell from the trees to signal the end of autumn and the beginning of winter, our youngest proposed a walk in the woods behind our house to see what interesting things we could find and to maybe look for trash to pick up. We donned hiking boots and gathered bags - enough to separate our potential finds into plastic, glass, metals and treasures if we got that lucky. As much as I prefer the other seasons to winter, I love that nature is revealed and so much more is visible once the trees are bare. That brief opportunity to explore and discover woods and forests before they are hidden under blankets of snow helps us appreciate the fascinating cycle of nature. We observed how plants and trees shed their leaves that would otherwise not survive the harsh cold of winter, while stems, twigs, buds and branches are tougher and capable of lying dormant, withstanding the extreme temperature drop and snow until reawakening in spring. We explored how evergreen needles are so strong that they can survive for years outside. We thought about what happens to the needles and leaves that do fall and how they are not wasted, as they decompose and restock the soil with nutrients to sustain organisms important to the ecosystem of the woods and that help to create the spongy floor that absorbs rain and snow. We saw bird nests way up high in trees, and located the branches where the wild turkeys "jump-fly" to sleep, all lined up in a neat row, in summer and fall. We saw signs of deer and other animals who had walked through before us.

Unfortunately, we found enough recyclables that must have been carried by our brook through the woods from the busy road, but were satisfied to get them out of there. We were equally fortunate to find the treasures of three large pieces of birch bark that could be used for an art project, a full hawk feather, a very old glass bottle that might have contained root beer or some even earlier drink, and most interesting of all an abandoned farm truck that we had heard was out there but had never happened to see. Our property and neighbors' had been subdivided from a farm many years ago and apparently the truck was left there. We imagined all the activities that must have occurred out here so many years ago when this area was farm land, and wondered if the farm family ever decorated the beautiful, lone spruce that stands in the middle of the woods, unseen from our house and our neighbors' ... or was it just a baby tree back then.... With exploration as a basis for future planning, we're thinking of walking our local section of the Tennessee Gas Pipeline next!

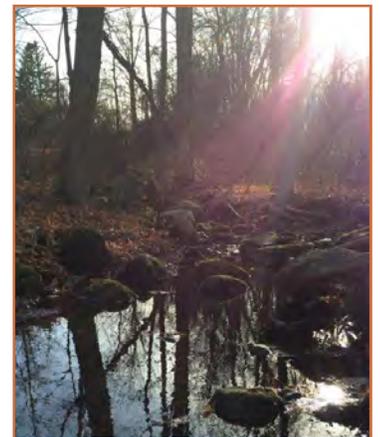
As I considered the wonder of this day of exploration, I was again reminded of a book I mentioned in the *MACC Quarterly* two years ago, and its important message that is worth sharing again. In *Outside Lies Magic*, author John Stilgoe theorizes that an awareness of the mundane details of the outside world - city streets, parking lots, buildings, lampposts and back alleys and country roads and fields alike - can be educational, amusing, even inspiring. As I

noted previously, Stilgoe teaches that observing and analyzing things like the trends in paint colors used in institutional settings or the placement of escape hatches in buses on their roofs versus their earlier floor placement can be portals into the history of industrialization and can help with planning for the future. Or that observing patterns in residential housing, such as cultivating front lawns, shows a root to our agrarian past; the dates on cast-iron storm-drain covers show the shift of iron-founding across the northeast; or how a pattern of dead maple and oak trees along highways shows the effect of road salt on those species, while the same salt seems to reward poison ivy with lush growth. He observes smoke from cars and factories and ponders their effect on everything from people's health to their ability to perceive colors differently. The author's goal isn't necessarily to solve issues like transportation safety, building patterns or climate change, but to get us to make our own observations about those things more and see where that may lead. Exploration, he says, encourages creativity, serendipity, invention.



The theory of studying the past to assist in planning for the future is valuable for all of us who care about open space protection, climate change, planning and development of our cities and towns, wetlands protection, forestry, and energy - all topics on the minds of our MACC board members as we plan interesting and informative topics for learning and interaction at New England's largest Annual Environmental Conference. In addition to planning our educational topics, MACC has been busy this quarter with advocacy on a number of areas of proposed environmental and land use legislation, as well as the municipal enforcement bill. We commented on DEP's proposed regulations review and amendment process, which we are informed will not be completed by the original March 2016 deadline and we encourage our membership to review and provide comments on these important proposed changes.

I look forward to seeing you on March 5, 2016 at AEC; meanwhile, I encourage you all to get outside and see what inspiration you might find.



A handwritten signature in black ink that reads "Kate Connolly". The signature is written in a cursive, flowing style.

Kate Connolly is completing her term as MACC President in March 2016. She is a Principal with Louison, Costello, Condon and Pfaff LLP, where she practices land use and environmental law and general municipal law. She can be reached at 617-307-5051.

From the Director's Desk

Reports and legislation about wetlands protection have me wondering. What does it mean that wetlands are important and deserve (and require) protection? How do we ensure that protection?

Conservation commissions in Massachusetts protect wetlands. They have the legal responsibility under the Wetlands Protection Act to make sure activities in and near wetlands do not impair the ecological benefits provided by wetlands. When and how to do that is described in more than 150 pages of state regulations, in DEP manuals and policies, and for more than 190 towns and cities, in local wetland bylaws and ordinances.

Wetlands protect and improve water quality (including the drinking water for much of Massachusetts), provide opportunities for boating, fishing, birding, swimming, and other recreation, support active fisheries, and are home to native animals and plants, including rare and endangered species that would go extinct if not for wetlands. With a changing climate and rising sea levels, the ability of wetlands to soak up carbon and storm water and buffer us from floods is especially significant. Wetlands are a part of the web of life that supports and protects us all, locally and globally.

This, then, is the rub: there is not agreement on what to value, what protection of wetlands means, and how to

ensure that protection. Thus state legislation has been filed (once again) to exempt activities in wetlands from regulation and oversight, set unreasonable and unworkable standards for the adoption of local wetland bylaws and ordinances, and otherwise reduce the protections now afforded to wetlands. As far as I can tell, the proposed legislative changes would benefit one person, group, or industry without any real understanding of the implications for wetlands protection. (You can read about the state legislation at: http://maccweb.org/advocacy_legislation.html.) We also saw the recent release of the draft Massachusetts Food System Plan that would set a pathway to convert wetlands to agricultural use. (You can read our comments on the draft Plan at http://maccweb.org/advocacy_letters.html.)



We as a society have a sad history of destroying wetlands. The National Water Summary on Wetland Resources, United States Geological Survey Water Supply Paper 2425 (<http://water.usgs.gov/nwsum/WSP2425/history.html>), tells us that at the time of European settlement in the early 1600's, the area that was to become the conterminous United States had approximately 221 million acres of wetlands. About 103 million acres remained as of the mid-1980's. During that time, six states lost 85 percent or more of their original wetland acreage and an additional twenty-two states lost 50 percent or more of their original wetland

From the Director's Desk, continued on page 6

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DEP Issues New Snow Disposal Guidance

On Monday, December 21, 2015, the Massachusetts Department of Environmental Protection released a new Snow Disposal Guidance (<http://www.mass.gov/eea/agencies/massdep/water/regulations/snow-disposal-guidance.html>). The guidance is intended to encourage planning for snow management to ensure that collected snow is disposed of in a manner that will minimize environmental impacts while protecting public health and safety.

The guidance addresses: 1) selection of appropriate snow disposal sites; 2) preparation and maintenance of the selected snow disposal sites; and 3) snow disposal approvals and emergency certifications, including when snow can be disposed of in open water.

The guidance recommends that the municipal Department of Public Works or Highway Department, Conservation Commission, and Board of Health work together to select appropriate snow disposal sites and it sets forth site selection criteria, including that sites "located in upland locations that are not likely to impact sensitive environmental resources be selected first." DEP has an online mapping tool that can be used to identify snow disposal locations, as set forth in the guidance.

In a communication to chief elected officials and public works directors, DEP wrote that:

"Advanced identification and mapping of appropriate snow disposal sites can help facilitate each municipality's routine snow management efforts. In order to assist you with such efforts, MassDEP has created a new online mapping tool. The mapping tool is available at the MassGIS Online Mapping website at <https://maps.env.state.ma.us/dep/arcgis/js/templates/PSF/>. By clicking on the link for the OLIVER Online Data Viewer, you can select your town and overlay different resource areas. The MassGIS site includes MassDEP orthophoto maps, depicting local wetland resources, hard copies of which were mailed to each conservation commission several years ago. Identifying your proposed snow disposal locations can facilitate approval you may need from your conservation commission or from MassDEP if the disposal locations are in or near wetland resource areas. They will also help you to avoid locations that may negatively impact public water supplies. Identifying these locations and obtaining necessary approvals also may help you if you are seeking reimbursement from the Federal Emergency Management Agency (FEMA) for snow disposal costs."

MACC is interested in hearing from conservation commissions that have participated in the process of identifying appropriate locations for snow disposal by their city or town to learn how the process worked and any suggestion for improvements.



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Continued from page 4, From the Director's Desk

acreage. The huge loss of wetland acreage, often done for agricultural and urban expansion, was abetted by advances in technology and encouraged by political, financial, and institutional incentives to drain and fill wetlands. Even today, all of the effects of the losses are not fully understood.

The wholesale destruction of wetlands in the United States ended in the 1970's with the increased awareness that wetlands are valuable areas that perform important environmental functions. During that decade, laws such as the federal Clean Water Act and the Massachusetts Wetlands Protection Act were enacted, President Carter issued Executive Order 11990 requiring Federal government agencies to take steps to avoid impacts to wetlands when possible, and incentives and other mechanisms that had made the filling of wetlands economically feasible were eliminated. Nonetheless, the USGS reported that estimates of wetland losses in the conterminous United States from the mid-1970's to the mid-1980's were about 290,000 acres per year (one-half of the losses that occurred each year in the 1950's and '60's). Those numbers do not include degraded or modified wetlands. Although the estimate reflected a declining rate of loss, land development continued to destroy wetlands. In 1994, USGS noted that the rate of wetland conversion had slowed but wetland losses continued to outdistance wetland gains, despite the federal policy of "no-net loss of wetlands" established in 1989.

Most recently, the U.S. Fish & Wildlife Service, in its Status

and Trends of Wetlands in the Conterminous United States 2004 to 2009 Report to Congress (<http://www.fws.gov/wetlands/Status-And-Trends-2009/index.html>), released in 2011, determined that an estimated 62,300 acres of wetlands were lost in the conterminous United States between 2004 and 2009. (The report compared wetland acres lost to wetland acres gained to reach its numerical conclusion that losses outnumbered gains. It noted that 489,600 acres of former uplands were re-classified as wetlands during 2004-2009.)

Of great concern, *Status and Trends of Wetlands* reported that programs allowing for the mitigation of continued wetland losses through wetland re-establishment and creation have affected the diversity of wetland type(s) and spatial distribution locally and regionally. Some types of wetlands, such as freshwater emergent marshes and open water ponds, have been preferentially reestablished or created, whereas replacement of forested wetlands (a type that has experienced some of the greatest losses), has lagged behind and other types of wetlands including bogs and fens are seldom, if ever successfully replaced. There continues to be non-parity between wetland types that have been lost and subsequent wetland mitigation, reestablishment, or creation actions. The net effect has been the loss of wetland diversity, hydrologic function, biological communities, and a "homogenization of wetland landscapes."

We in Massachusetts have a very effective Wetlands Protection Act that has protected much wetland acreage, with protections strengthened by local wetland ordinances and bylaws in more than 190 cities and towns. Nonetheless, state law authorizes conservation commissions to allow wetland filling in certain very limited situations if the filling cannot be avoided or minimized. Usually when filling is permitted, the mitigation required for lost wetland acreage is the creation of a new wetland, through wetland "replication" or "replacement." The mitigation is not simply to replace wetland acreage lost as a bean-counting exercise, but instead the replication must contribute to the protection of the interests that would be affected by the filling. (More information about wetland replication requirements is in Special Topic 2: Wetland Replication and Creation, in *Protecting Wetlands and Open Space: MACC's Environmental Handbook for Massachusetts Conservation Commissioners.*)

MACC's Fall Conference 2015 was about wetland replication and restoration. Those projects must succeed if Massachusetts is to have no net loss of wetlands. At the conference we were reminded of a study, *Compensatory Wetland Mitigation in Massachusetts* by Stephen Brown and Peter Veneman (December 1998), that painted a bleak picture of the failure of wetland replication projects in Massachusetts. The Brown and Veneman report should have been a wake-up call across the state. It was not. Conference speakers discussed a recent study they had completed, not yet released, that reached a similarly bleak conclusion about wetland replication in Massachusetts. Only 29% of the wetland replication projects reviewed were built, appropriately sized, and regulatory compliant. That amounts to a 71% failure rate!

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Inexplicably, some of the projects that were not built, failed to produce wetlands, or failed to meet regulatory requirements nonetheless received certificates of compliance.

The conference also included information on why many wetland replication projects fail, how better planning and implementation can lead to more successful projects, and what conservation commissions can do in approving, conditioning, and monitoring projects to help ensure successful replication of wetlands. There is no one easy fix, but there are a number of steps that will make a real positive difference.

No regulatory system is perfect. There is no complete assurance of no net loss of wetlands. We know the limitations of the current wetland protection regulations, implement them the best we can, and seek to improve them. We also need to be as vigilant about the regulatory system as we are about wetlands. People will propose programs, legislation, and projects that seemingly forget or ignore the recent gains we have made in saving wetlands. We understand the values of wetlands. How we communicate those values to others and at the same time make an imperfect system work well to protect valued natural resources is in the DNA of Massachusetts conservation commissions.

Gene Beason

Congratulations Fundamentals Graduates!!

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Thomas Friedlander	Sudbury
Lucy Gertz	Tyngsborough
Joseph Guardino	Bedford
Lee Leach	Norwood
Nadia Madden	Shirley



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NOAA Releases New Rainfall Atlas for Massachusetts

By Patrick C. Garner

Current Science

On September 30, 2015, the National Oceanic and Atmospheric Administration (NOAA) released Atlas 14, the long-awaited volume updating precipitation data for New England and New York. The new Atlas provides estimated rainfall for one to 1,000 year storm events. As one of NOAA's peer reviewers for Atlas 14, I have been anticipating this release for several years. Atlas 14 may be viewed on-line at: http://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html?bkmrk=ma.

Atlas 14 supersedes the 1961 Technical Paper 40 (TP-40). This latest release is of great importance to Massachusetts because MassDEP's required extreme precipitation quantities for culvert sizing and storm sewers is based on TP-40, which was published 54 years ago following a 30-year drought. For some time we have been aware that it regularly underestimated actual storm events.

Precipitation events in New England in the last 15 years have repeatedly exceeded TP-40's 50 and 100-year storms. The intensity of local storms has blown out culverts and undermined roads, threatened dams and caused historic flooding. Climate scientists and hydrologists project that the effect of these increasingly common events will result in further infrastructure failures, additional stream channel scouring and even regional wetland changes.

Using current precipitation amounts is critical for infrastructure design. Rainfall data is also used to determine the extent of the 10-year floodplain significant to wildlife habitat and the extent of isolated lands subject to flooding. Regardless, citing MassDEP's regulations, some regional engineering firms continue to use the long discredited TP-40 data. The result: road culverts, subsurface storm drains, stormwater basins and river crossing structures may be undersized by as much as 20%.

For instance, on October 8, 2005, a storm dropped 11.5 inches of rain in 24 hours on Keene, New Hampshire. The volume was more than three times that typically used to size culverts and caused structure failures, washed away houses, and led to seven deaths. Just days before the storm, researchers with the Environmental Studies Department at Antioch New England Graduate School had completed a groundbreaking study that anticipated such storms and predicted infrastructure failures. Lead scientist Latham Stack stated, "The impacts of climate change are now unavoidable. We may have a window of opportunity to prepare civil infrastructures. While expensive, these preparations can be affordable if undertaken far enough in advance."

To date MassDEP has not revised its *Stormwater Management Handbook* to require use of Atlas 14. The DEP *Hydrology Handbook for Conservation Commissioners* states, "DEP will continue to require the use of TP-40 on any case it reviews under the Wetlands Protection Act and Stormwater Management Policy." The MassDEP *Stormwater Handbook* still references use of the federal TR-55 (June 1986) for hydrologic calculations. This is problematic because rainfall amounts in TR-55 itself are based on TP-40. In short, MassDEP's regulations reflect - and require use of - inaccurate and discredited precipitation data.

As noted, TP-40 was published in 1961 near the end of a long drought. In the 1970s, the drought ended in the northeast and climatological conditions rapidly changed. Eight of the ten years in the past century with the most precipitation have occurred since 1970. Global climate models (GCMs) uniformly project that the severity of extreme events will increase.

In the last decade the USGS published a review in the *Journal of Hydrology* summarizing the findings of more than 100 peer-reviewed studies. The review concludes that on a global scale, precipitation, runoff, atmospheric water vapor, soil moisture, evapotranspiration and growing season length are all increasing. A key aspect of this study is that although the *frequency* of storms worldwide has not increased (whereas frequency *has* increased in the northeastern United States), the *intensity* of precipitation has increased worldwide and in our region. Under this circumstance, storms shed larger volumes of water in a shorter period of time and, consequently, storm culverts designed for past climate conditions cannot contain the flow.

Of note, the Northeast Regional Climate Center (at Cornell University) *Atlas of Precipitation Extremes for the Northeast United States* (1997) - generally referred to as the Cornell Atlas and intended to be an authoritative regional update of TP-40 - does not generate the identical precipitation data as Atlas 14. The Cornell Atlas rainfall events tend to be slightly higher than those indicated in Atlas 14.

Analysis of Culvert Sizing

How big is the threat to infrastructure when old hydrological data is used for design? The researchers with the Environmental Studies Department at Antioch New England Graduate School say it is considerable. To confirm their findings, I analyze a number of storm events in this article, comparing TP-40 data to Atlas 14. Then, using the comparative data, I size culverts to determine if flows would be restricted. Because undersized storm sewers and

NOAA Releases New Rainfall Data, continued on page 20

How Conservation Commissions Can (and Should) Regulate Land Subject to Coastal Storm Flowage

By Lealdon Langley and Rebecca Haney

Land subject to coastal storm flowage (LSCSF) reduces storm damage and flooding by diminishing and buffering the high energy effects of storms. LSCSF is listed as an area subject to protection under the Wetlands Protection Act (WPA) (M.G.L. c. 131, § 40) and associated Regulations 310 CMR (10.02(1)(d)). Each area subject to protection is presumed to be significant to one or more interests of the Act. Although not explicitly stated in the Regulations, conservation commissions can make the determination that LSCSF is significant to the interests of storm damage prevention and flood control because of its inherent functions. Specifically, LSCSF can:

- Slow down flood waters, allow them to flow across a natural landform surface, and provide frictional resistance, thereby reducing their energy and destruction potential.
- Allow flood waters to spread over a wide area without obstructions, thereby reducing the channeling of flood waters and storm-wave overwash that flow toward adjacent or landward areas.
- Allow flood waters to be detained, absorbed into the ground, or evaporated into the atmosphere.
- Protect the land from storm erosion by providing a substrate for vegetation that helps to stabilize sediments and slow down flood waters.

When reviewing projects in LSCSF, commissions should: 1) presume that LSCSF performs functions for the storm damage prevention and flood control interests, 2) consider whether the project adversely impacts these functions and interests, and 3) impose conditions to contribute to the protection of the interests.

Common physical characteristics of LSCSF that are critical to the protection of the WPA interests of storm damage protection and flood control include: topography, slope, surface area, soil characteristics (i.e., composition, size, shape and density of material), vegetation, erodability, and permeability of the floodplain. These characteristics can allow for the dissipation of storm wave energy, slowing of moving water, and absorption of flood waters. For instance, a less steep and permeable seaward-sloping land surface will more effectively reduce wave energy and wave reflection. Wave energy may also be expended when sediments are eroded and transported within the floodplain, as well as by percolation of water through more sediments and porous surfaces, thereby lessening the effects of backrush, scour, and erosion. In addition, for hydraulically constricted areas, such as areas subject to ponding due to overwash (often in conjunction with heavy rainfall events), or areas where the flow from flooding is restricted (e.g., pipe, cul-

vert, or dike), the ability to store a volume of flood water is a critical characteristic.

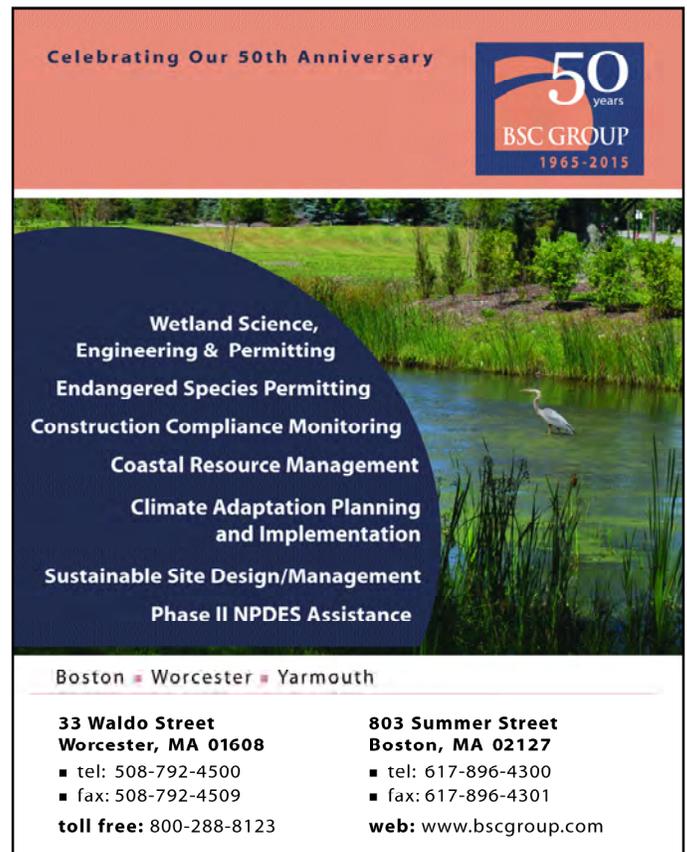
The guidelines below may help inform commissions in their project review.

When commissions determine that LSCSF overlays other resource areas listed in the Regulations, the applicable performance standards for each resource area should be applied and the project should be appropriately conditioned to protect all stated interests.

When commissions determine that LSCSF does not overlay another resource area, commissions should consider the impacts of the proposed project on the landform and whether the project would result in a change in drainage or flow characteristics (e.g., change in direction) on the subject site that would increase the velocity or volume of flood waters to adjacent properties.

More specifically, the following projects may diminish the functions that protect the storm damage prevention and flood control interests:

How Conservation Commissions... continued on page 24



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Annual Environmental Conference Information and Registration

Saturday, March 5, 2016 • College of the Holy Cross, Worcester

Agenda	Fees to Attend	Notes
8:00-8:45 Registration, Exhibit Hall Opens, Refreshments	MACC Member* \$115 Government & Non-profit** \$125	Advance registration is strongly recommended. Payment or purchase order should accompany registration.
8:45-9:45 Opening Session, Annual Business Meeting, Speakers, Awards	Non-member \$145 Full-time Student \$65	
10:00-12:30 Fundamentals Units 104, 202	Fee is per person and includes morning refreshments and lunch. *Member fee applies to: conservation commissioners when commission dues are paid or accompany this registration; and other MACC members. **Other municipal officials and government agency or non-profit organization employees when fee is paid by agency or organization check.	Register early to guarantee workshop choices.
10:00-11:30 Workshop Series A		Refunds, minus a \$20.00 processing fee, will be issued only if a written cancellation is received by February 19.
11:15-2:00 Lunch in Kimball Hall		
1:15-2:45 Workshop Series B		
2:00-4:30 Fundamentals Units 201, 205		
3:00-4:30 Workshop Series C		
4:30-5:15 President's Reception and Raffle		
		See inclement weather policy at www.maccweb.org/edu_aec_2016.html

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2:00 p.m.-4:30 p.m.

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_____ Unit 205 (c0658)

Workshop Series

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for each session

Workshop # _____ A (10:00-11:30 a.m.)

Workshop # _____ B (1:15-2:45 p.m.)

Workshop # _____ C (3:00-4:30 p.m.)

Confirmations with directions will be provided when an email address is given.

Return with payment to: MACC, 10 Juniper Road, Belmont, MA 02478

MACC ANNUAL ENVIRONMENTAL CONFERENCE 2016

Saturday, March 5 • College of the Holy Cross, Worcester

Workshops and Training Program Sessions

Workshop descriptions are on following pages.

WORKSHOP SERIES A-C

Only 1 workshop can be taken during each time slot

SERIES A - 10:00 a.m. - 11:30 a.m.

1. Cold Water Fisheries: Protecting, Enhancing, and Regulating a Critical Resource Area
2. What Conservation Commissions Can Do to Regulate Activity in Land Subject to Coastal Storm Flowage
3. Culvert Replacement Implementation: Understanding the Latest Regulatory Changes and Key Aspects of a Successful Replacement
4. Protecting Massachusetts Vernal Pools
5. How to Run an Efficient Conservation Office: Getting More from Your Limited Time
6. Greening Your Community with LID: Saving Land, Water, and Money
7. Effective Wetlands Enforcement
8. Massachusetts Wildlife Climate Change Action Tool: Inspiring Local Adaptation on the Ground

LUNCH BREAK
Kimball Dining Hall

AND

VISIT OUR EXHIBITORS
lowest level of Hogan Center

SERIES B - 1:15 p.m. - 2:45 p.m.

9. Mapping Priority Parcels for Conservation: A New Tool You Can Use
10. StormSmart Properties Fact Sheet Series: Strategies to Reduce Coastal Erosion and Storm Damage while Minimizing Impacts
11. Right-Sizing Monitoring for Stream Barrier Removal Projects
12. Solar Arrays: Permitting Issues for Commissions to Consider
13. The Habits of Highly Effective Conservation Commissions
14. An Evaluation of Green Infrastructure in a Traditional New England Village
15. Commissions Behaving Badly: Lessons in Legal Liability
16. Understanding the Science, Design, and Use of Fluvial Erosion Hazard Maps in MA

SERIES C - 3:00 p.m. - 4:30 p.m.

17. Protecting Biodiversity through Conservation Planning
18. Making River Buffer Restoration Work for Water Quality and Habitat
19. Interactive Questions and Answers for all Things Conservation
20. It's Raining Cats and Dogs! How Recent Precipitation Changes May Affect Wetlands Regulation
21. Conservation Commissions: Front Line in Fighting Climate Change
22. Natural Gas Pipelines: The Role of Conservation Commissions
23. Culvert Assessment: The First Step toward Restoring River and Stream Continuity
24. Interpreting FEMA Flood Insurance Rate Maps and Studies and MA Coastal Zone A Zone Maps

TRAINING PROGRAM SESSIONS

Fundamentals for Conservation Commissioners

Pre-registration required

(Only 1 Unit can be taken during each time slot)

10:00 a.m. - 12:30 p.m.

UNIT 104. Wetland Functions and Values

UNIT 202. Protecting Wildlife Habitat

LUNCH BREAK

2:00 p.m. - 4:30 p.m.

UNIT 201 Getting Home Before Midnight: How to Run an Effective Meeting

UNIT 205. Effective Erosion and Sediment Control

Volunteers May Receive Free Admission

Contact Lindsay Martucci at 617.489.3930 or lindsay.martucci@macweb.org



Annual Environmental Conference Workshop Descriptions and



Fundamentals for Conservation Commissioners Units Content

Series A 10:00 a.m.-11:30 a.m.

1. **Cold Water Fisheries: Protecting, Enhancing, and Regulating a Critical Resource Area**

The Massachusetts Division of Fisheries and Wildlife recently published a data layer on MassGIS that allows users to determine the presence of coldwater resources (i.e., habitat for trout and other cold water species). This workshop will provide conservation commissions an overview on: 1) what are cold water resources; 2) how to use the new data layer when reviewing projects (e.g., storm water options and project design considerations); 3) how to use the data as a Wetlands Protection Act regulator; and, 4) innovative stormwater, connectivity, and stabilization techniques for cold water fisheries.

Speakers: David Paulson, Endangered Species Review Biologist, Natural Heritage and Endangered Species Program, Massachusetts Division of Fisheries and Wildlife
Jason Stolarski, Fisheries Biologist, Fisheries Program, Massachusetts Division of Fisheries and Wildlife
Timothy Dexter, Environmental Analyst, Massachusetts Department of Transportation: Highway Division Environmental Section

2. **What Conservation Commissions Can Do to Regulate Activities in Land Subject to Coastal Storm Flowage**

Land Subject to Coastal Storm Flowage (LSCSF) is listed as an area subject to protection under the Regulations, as well as under the Act. Each area subject to protection is presumed to be significant to one or more interests of the Act. Therefore, although not explicitly stated in the regulations, and unless it can be overcome, conservation commissions can assume that LSCSF is significant to the interests of storm damage prevention and flood control because of its inherent functions. This workshop will cover the beneficial functions and types of activities that interfere with those functions. The workshop will also summarize MassDEP's work with a Technical Advisory Committee to evaluate this issue.

Speakers: Rebecca Haney, CFM, Coastal Geologist, Mass Office of Coastal Zone Management
Lealdon Langley, Director, MassDEP Wetlands Program
Timothy Jones, Presiding Officer, MassDEP Office of Appeals and Dispute Resolution

3. **Culvert Replacement Implementation: Understanding the Latest Regulatory Changes and Key Aspects of a Successful Replacement**

Undersized culverts disrupt natural stream processes and obstruct the movement of fish and other aquatic organisms. For local road managers, undersized culverts often pose public safety risks, due to culvert failure, road washouts or flooding during storms. This workshop will cover: 1) the recent WPA regulatory changes and interpretation of "maximum extent practicable;" 2) typical costs of culvert replacements; and 3) the basic steps conservation commissioners, consultants, and DPWs can take to implement successful projects meeting MA Stream Crossing Standards. Attendees will obtain a detailed understanding of how to work with their local DPWs to simplify and get the most out of a culvert replacement project.

Speakers: David Cameron, PWS, Chief of Wetlands & Waterways Program, MassDEP-Western Regional Office
Tim Chorey, Stream Continuity Specialist, Division of Ecological Restoration, MA Department of Fish and Game

4. **Protecting Massachusetts Vernal Pools**

Vernal pools are an important component of healthy ecosystems across the state, and they receive a host of legal protection under federal, state, and local wetland regulations. Their ecological functional values are at the root of why we protect them; and their variety, temporary nature, and fluctuations are at the root of much confusion over how we protect them. We will explore and explain both their function and best practices for their protection. This workshop will be geared to an audience already familiar with vernal pool certification methodology.

Speakers: Matthew R. Burne, Walden Woods Project
Leo P. Kenney, Vernal Pool Association

5. **How to Run an Efficient Conservation Office: Getting More from Your Limited Time**

Learn about administrative systems, forms, and techniques to simplify the myriad responsibilities that can eat up your time. Discussion will focus on establishing efficient timelines, filing systems, agendas, minutes, and regulatory correspondences. New technologies for information management and sharing will be presented. Come away with a compendium of useful templates and forms to simplify your professional life in the conservation office.

Speaker: Jennifer Steel, Senior Environmental Planner, Newton; MACC Director

6. **Greening Your Community with LID: Saving Land, Water, and Money**

This workshop takes a fresh look at Low Impact Development (LID) and Green Infrastructure (GI) through the lens of multiple fiscal and other benefits to municipalities. It presents facts and figures on how LID and GI can assist communities to protect wetlands and water resources, reduce flooding and stormwater management costs, minimize infrastructure and maintenance costs, improve quality of life, and increase property values. The workshop will address how municipal departments including conservation, planning, and public works can harmonize their roles by applying cost-effective LID and GI and will include information resources on financing, financial incentives, grants and technical assistance.

Speakers: Scott Horsley, Principal, Horsley Witten Group, Inc.
Stefanie Covino, Project Coordinator, Shaping the Future of Your Community, Mass Audubon

7. **Effective Wetlands Enforcement**

Addressing wetlands violations can be a confusing and frustrating task for conservation commissions and staff. What are the enforcement options under the Wetlands Protection Act and local bylaws/ordinances, what procedures are required for each option, and which option will be most effective in achieving compliance? This workshop will explain the options and procedures in a dynamic and practical way, using hypothetical scenarios based on fact. Attendees will receive helpful handouts and leave equipped with the tools to carry out effective enforcement.

Speakers: Rebekah Lacey, Esq., Miyares and Harrington, LLP; MACC Director
Cynthia O'Connell, Conservation Agent, Town of Canton; MACC Director

8. **Massachusetts Wildlife Climate Action Tool: Inspiring Local Adaptation on the Ground**

The Massachusetts Wildlife Climate Action Tool is designed to inform and inspire local land conservation and management decisions to protect the Commonwealth's natural resources in a changing climate. With this tool, conservation commissioners can: 1) access information on climate change impacts and vulnerabilities of fish and wildlife species and associated habitats; 2) explore adaptation strategies to maintain resilient natural communities, such as replacing culverts, amending local bylaws, and adapting forestry practices and land protection strategies based on location and interest. This workshop will provide an overview of the Climate Action Tool, discuss on-the-ground uses with participants, and seek input on additional content to include as work continues to improve the Tool.

Speakers: Kathleen Theoharides, Consultant; Conservation Commissioner, Town of Grafton
Melissa Ocana, Research and Extension Project Manager, Department of Environmental Conservation, UMass Amherst

Series B 1:15 p.m.-2:45 p.m.

9. **Mapping Priority Parcels for Conservation: A New Tool You Can Use**

This workshop will introduce and demonstrate a new web-based tool developed to allow Massachusetts conservationists to rapidly identify specific parcels to protect to achieve their land protection goals. The tool prioritizes land protection opportunities by synthesizing multiple state-of-the-art data sets: biodiversity (BioMap2), climate change resilience (based on The Nature Conservancy modeling), proximity to existing conservation land, size of parcel, and wildlife connectivity. The workshop will provide practical tools for conservation commissions to conduct targeted open space planning and focus limited municipal resources.

Speakers: Jeff Collins, Director of Ecological Management, Mass Audubon
Andy Finton, Conservation Programs Director, The Nature Conservancy

10. **StormSmart Properties Fact Sheet Series: Strategies to Reduce Coastal Erosion and Storm Damage while Minimizing Impacts**

As part of the StormSmart Coasts program, the Massachusetts Office of Coastal Zone Management (CZM) developed StormSmart Properties fact sheets to give coastal property owners important information on a range of measures that can effectively reduce erosion and storm damage while minimizing impacts to shoreline systems. Fact sheets are currently available on a variety of techniques, such as artificial dunes and dune nourishment and sand fencing, among others. The fact sheets provide significant detail regarding where each technique is appropriate, the benefits and impacts relative to other options, permitting and regulatory standards, costs, and maintenance requirements, and detailed design considerations highlighting the latest in progressive, plant-focused bioengineering techniques to minimize adverse impacts and ensure a successful project. Learn about how to use the fact sheets and about best management practices for new fact sheets in development, including repair and reconstruction of seawalls and revetments and new guidance for bio-engineering projects.

Speakers: Rebecca Haney, CFM, Coastal Geologist, Mass Office of Coastal Zone Management
Seth Wilkinson, MALD, President, Wilkinson Ecological Design, Inc.

11. **Right-Sizing Monitoring for Stream Barrier Removal Projects**

Removing dams and replacing undersized culverts can have extraordinary benefits for rivers and streams, as well as the people and wildlife that use them. Once a restoration project is completed, how do you know that it has had the intended effects? As these projects become more common, conservation commissions are increasingly involved in shaping how to evaluate success. This workshop will discuss several sources for guidance on monitoring barrier removal projects and how monitoring fits into the new Wetlands Protection Act regulations. The presenters will also share examples from their practice.

Speakers: Nick Wildman, Restoration Specialist, Div. of Ecological Restoration, MA Dept. of Fish & Game
Sara Grady, PhD., South Shore Regional Coordinator for MassBays; Watershed Ecologist
for the North and South Rivers Watershed Association

12. **Solar Arrays: Permitting Issues for Commissions to Consider**

More and more proposals for solar arrays within wetland resource areas are being presented to conservation commissions and MassDEP. This workshop will provide an overview, examples, case studies and a discussion of the DEP Wetlands Regulatory and Policy position about this emerging topic. The presentation will include: 1) a discussion of placement of arrays, construction and maintenance of roadways within wetland resource areas, and their buffer zones; 2) MassDEP's position on tree cutting within BVW to reduce shading of solar panels and on stormwater management requirements; and 3) existing government incentives for the construction of panels, panel efficiency, technical siting requirements, and engineering issues.

Speakers: Lealdon Langley, Director, MassDEP Wetlands Program
Michael Howard, PWS, CWS, Principal & Manager, Ecological Sciences Group, Epsilon Associates, Inc.; MACC Director

13. **The Habits of Highly Effective Conservation Commissions**

An effective conservation commission gets its business done, works collegially to engage the strengths of each member, and is respected within its community. This interactive workshop is designed to help you identify and prioritize ways in which you can strengthen the work of your commission. We will address perennially challenging topics such as effective group decision-making, working with dominant and disengaged board members, setting expectations and engaging new members, rotating roles, and developing a proactive annual work plan. We will also talk about what to do when a commission member (or staff) is behaving badly. Depending on the topics brought by participants we may also touch on developing effective relationships between board and staff, strengthening relationships with other boards and departments (including appointing authorities), and managing agendas to shorten meetings. Participants will come away with practical suggestions for improving the effectiveness of their commissions' work.

Speakers: Kathy Sferra, Conservation Coordinator, Town of Stow
TBD

14. **An Evaluation of Green Infrastructure in a Traditional New England Village**

This workshop will explore the challenges of implementing green infrastructure within a village redevelopment project, focusing on the Route 149 (Cotuit Road) corridor within Marstons Mills, Barnstable, MA. Following a brief presentation, participants will be asked to put sustainability planning and design into action with a corridor re-design for a traditional New England Village. This interactive workshop will require participants to balance stormwater management with village redevelopment through the incorporation of green infrastructure practices in a Complete Street design.

Speakers: Brian Kuchar RLA, P.E., Senior Landscape Architect, Horsley Witten Group, Inc.
Jo Anne Miller Buntich, Director, Growth Management Department, Town of Barnstable

15. **Commissions Behaving Badly: Lessons in Legal Liability**

You're worried and confused about possible civil rights violations, jurisdiction limits, legal violations, conflicts of interest, illegal public meetings, unfair board procedure, trespass on private property, and maybe even risky business by certain members of your commission. This workshop will confirm your worst fears as well as eliminate your unjustified worries by looking at actual cases which commissions have lost in court. Learn some painful lessons from mistakes made by others. When is your enforcement of laws too aggressive? When is your application of regulations too strict? When do your permit conditions go over the line? How much discretion does the law give you to make decisions? What if you rely on motherhood and apple pie instead of science? What if you injure or damage someone by being careless? What if you deprive someone of due process of law? What if a denial constitutes an unconstitutional taking without compensation? How should your commission comport itself to avoid or minimize such liabilities?

Speaker: Gregor I. McGregor, Esq., McGregor & Legere, PC; MACC Director

16. **Understanding the Science, Design, and Use of Fluvial Erosion Hazard Maps in MA**

Fluvial erosion and deposition during riverine flood events are consistently the costliest natural hazards each year in parts of Massachusetts. The Commonwealth has not provided landowners, zoning boards, or conservation commissions with the necessary, reliable, and science-based tools to understand and manage these hazards. A Massachusetts-specific fluvial geomorphology task force - led by UMass and MA state agency scientists - has created a series of pilot fluvial erosion hazard maps for rivers throughout Western Massachusetts. Unlike Vermont, these maps are not yet required to manage land adjacent to rivers in the Commonwealth; and yet municipalities are requesting the information be made available. This workshop will (1) describe the science behind current fluvial erosion hazard maps in MA; (2) describe how landowners, zoning boards, and conservations commissions may use the maps to understand fluvial hazards; and (3) discuss the current and future legal barriers and opportunities to utilizing fluvial erosion hazard maps to manage land adjacent to rivers in Massachusetts.

Speakers: Christine Hatch, Ph.D., Extension Assistant Professor, Dept. of Geosciences, University of Massachusetts at Amherst
Benjamin P. Warner, Ph.D., Postdoctoral Researcher, Dept. of Geosciences, University of Massachusetts at Amherst

Series C 3:00 p.m.-4:30 p.m.

17. **Protecting Biodiversity through Conservation Planning**

Strategic conservation planning is a crucial tool for protecting biodiversity, from rare species to unique natural communities. This workshop will provide an overview of the MA Division of Fisheries and Wildlife's Natural Heritage and Endangered Species Program (NHESP) and its conservation planning process. NHESP staff will discuss how it applies conservation planning tools to land protection, habitat management, and regulatory review under the Massachusetts Endangered Species Act and the Wetlands Protection Act regulations.

Speakers: Jesse Leddick, Endangered Species Review Biologist, Natural Heritage & Endangered Species Program, MA Division of Fisheries and Wildlife
Sarah Haggerty, Chief of Information and Program Development, Natural Heritage & Endangered Species Program, MA Division of Fisheries and Wildlife
Caren Caljouw, Habitat Biologist, MA Division of Fisheries and Wildlife

18. **Making River Buffer Restoration Work for Water Quality and Habitat**

How do you decide where to restore or protect lands along rivers to make the greatest difference for water quality and habitat? How can you protect or better manage the forested lands along your rivers? The first part of this workshop provides a case study of how river buffer areas were selected for protection and restoration in a collaborative project in the Merrimack watershed funded by the US Forest Service - from the landscape-scale to specific site selection; the second part highlights how towns and conservation commissions can restore or protect forested river buffers through conservation, management, and bylaws. We will highlight lessons learned in the selection of river buffer areas in a watershed and a process for moving forward.

Speakers: Caroly A. Shumway, Ph.D., Executive Director, Merrimack River Watershed Council
Alan Futterman, Land Programs and Outreach Director, Nashua River Watershed Association
Karen Bennett, Extension Forestry Professor and Specialist at University of New Hampshire Cooperative Extension

19. **Interactive Questions and Answers for All Things Conservation**

Bring your difficult questions to a round table discussion with colleagues from across the state for a peer-moderated exploration of issues commissions are facing. This will be a lightly moderated, informal, open discussion for sharing ideas, questions, and answers on all topics conservation commission. This inaugural "roundtable discussion" could include such diverse topics as basic roles and responsibilities, finances, interpersonal relations, record keeping, divisions of labor, and balancing the big picture. Participants are encouraged to suggest a topic or question on the message board at the conference, or simply come to the session with a question or example to discuss. Experienced agents and assistants will help guide the discussion.

Speakers: Jennifer Carlino, Conservation Director, Town of Norton; President, Massachusetts Society of Municipal Conservation Professionals; MACC Director
Jennifer Steel, Senior Environmental Planner, Newton; MACC Director
Jacquie Goring, Conservation Assistant, Town of Stow

20. **It's Raining Cats and Dogs! How Recent Precipitation Changes May Affect Wetlands Regulation**

Evidence is mounting that the historic precipitation and streamflow frequency and intensity data is now outdated due to changes in natural precipitation and streamflow patterns possibly driven by climate change. To address these changes affecting wetland resources, MassDEP is examining options to revise the methodology currently required by the wetland regulations, which may affect the extent of Bordering Land Subject to Flooding (BLSF), and the sizing of culverts and stormwater management structures. This workshop will compare the current methodology with the new precipitation frequency atlases developed by the National Oceanic and Atmospheric Administration (NOAA) and Northeast Regional Climate Center (NRCC) at Cornell University, as well as new streamflow frequency information published by the U.S. Geological Survey (USGS), and discuss possible options for incorporating this new information into the wetland regulations.

Speakers: Thomas Maguire, Regional Coordinator, MassDEP Wetlands Program
TBD

21. **Conservation Commissions: Front Line in Fighting Climate Change**
 Through protection and restoration of the biosphere at the local, regional, and continental scales, we can remove legacy carbon from the atmosphere and reverse global warming. Conservation commissions have an important role to play, including teaching the science in decisions; linking land conservation, wetlands protection, and ecological restoration; enforcing strict application of mitigation/replication requirements and respect for hydrology; and long-term monitoring of project sites to ensure the biodiversity and ecosystem processes (including carbon, water, and nutrient cycling) are maintained. Case studies that failed to apply these principles will be examined, and climate friendly alternative approaches discussed. Conservation commissioners will learn how to be climate-savvy and sustain biodiversity and ecosystem values in the administration of the Wetlands Protection Act.
 Speakers: Sharon McGregor, Consultant on Biodiversity and Climate; Board Member, Biodiversity for a Livable Climate
 Jim Laurie, Restoration Ecologist, Biodiversity for a Livable Climate
22. **Natural Gas Pipelines: The Role of Conservation Commissions**
 There are numerous natural gas pipelines being proposed for Massachusetts that are before the Federal Regulatory Energy Commission (FERC). This workshop will take a look at the techniques of gas pipeline construction and potential impacts on wetlands and open space, provide information on the role of conservation commissions under the Wetlands Protection Act and local wetland bylaws in permitting those pipelines (that may have federal preemption of some state and local requirements), and the role MassDEP intends to play in the permitting process.
 Speakers: Eugene Benson, Executive Director, MACC
 Lealdon Langley, Director, MassDEP Wetlands Program
 TBD
23. **Culvert Assessment: The First Step toward Restoring River and Stream Continuity**
 Culverts often degrade rivers and streams by blocking the movement of fish and other aquatic organisms. Culvert replacement offers excellent opportunities for enhancing stream connectivity, either as mitigation projects or proactive restoration. However, there are so many road-stream crossings in Massachusetts that it is essential that scarce restoration dollars be targeted at sites with the highest restoration potential. Culvert assessment is the first step in determining which sites in your community or watershed should be priorities for culvert replacement. Massachusetts is part of a 13-state program, the North Atlantic Aquatic Connectivity Collaborative (NAACC), providing an assessment protocol and support for organizations and communities engaged in the assessment of road-stream crossings.
 Speakers: Scott Jackson, Extension Associate Professor, UMass Amherst; Conservation Commissioner, Town of Whately; MACC Officer
 Carrie Banks, Regional Planner, Division of Ecological Restoration, MA Department of Fish and Game
24. **Interpreting FEMA Flood Insurance Rate Maps & Studies and MA Coastal A Zone Maps**
 Local officials are charged with making decisions regarding development in floodplains, which requires review and interpretation of the FEMA Flood Insurance Rate Maps (FIRMs) and Flood Insurance Studies (FISs). Because of the complexity of review, officials may misinterpret the data and arrive at incorrect flood zone delineations. To address this problem, the Massachusetts Office of Coastal Zone Management (CZM) and the Massachusetts Department of Conservation and Recreation (DCR) Flood Hazard Management Program have produced a guidance document to improve the ability of local and state officials to correctly use and interpret FIRMs and FISs. CZM and DCR have also produced the Massachusetts Coastal A Zone Maps to accurately depict the Coastal A Zone based on current FEMA guidance to facilitate implementation of new requirements for Coastal A Zones in the 9th Edition of the State Building Code. This workshop will introduce and describe how to use those important resources.
 Speakers: Rebecca Haney, Coastal Geologist, Massachusetts Office of Coastal Zone Management
 TBD

Fundamentals for Conservation Commissioners

10:00 a.m. - 12:30 p.m.

Unit 104: Wetland Functions and Values

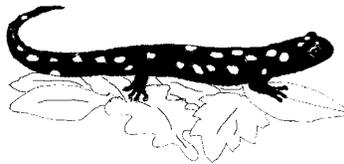
Content: Common vegetated wetlands in Massachusetts; differences between the scientific and regulatory definitions of wetlands; functions, characteristics, and watershed context of wetlands; performance standards; and buffer zones

Instructor: Ingeborg Hegemann, Vice President, BSC Group; Conservation Commissioner, Town of Stow

Unit 202: Protecting Wildlife Habitat

Content: Presumption of significance for wildlife habitat; protecting habitat for rare wetlands wildlife; protections for vernal pool habitat; wildlife habitat evaluations; determining if a project will have significant adverse impacts on wildlife habitat

Instructor: Scott Jackson, Extension Associate Professor, University of Massachusetts Amherst; Conservation Commissioner, Town of Whately; MACC Officer



2:00 p.m. - 4:30 p.m.

Unit 201: Getting Home Before Midnight: How to Run an Effective Meeting

Content: Meeting preparation; participants and their interests; group dynamics; recordkeeping; Public Records Law; communication techniques

Instructor: Nathaniel Stevens, Esq., Senior Associate, McGregor & Legere, P.C.; Conservation Commissioner, Town of Arlington

Unit 205: Effective Erosion and Sediment Control

Content: Soil erosion processes; jurisdiction and regulations; control applications; best management practices; incorporation of ESC into conservation commission decision-making

Instructor: Paul J. McManus, LSP, PWS, President, EcoTec, Inc.



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Advocacy Update

By Eugene Benson

In this Advocacy Update we take a three-month look back at state legislation, Executive Order 562, and Kinder Morgan's proposed Northeast Energy Direct natural gas pipeline. Be sure to visit the advocacy pages of MACC's website for continued updates and access to documents: <http://maccweb.org/advocacy.html>.

State Legislation

State House legislative committees held hearings this fall on legislation relating to wetlands and open space protection. Most of the bills would reduce protections of wetlands and open space. The bills remain in committee. The longer they remain in committee the less likely they will be reported out favorably or have enough time to make their way through the legislature before the session ends. MACC testified against House Bills 664, 665, 666, 683, and 3013 and Senate Bill 881.

House Bill 1864 also remains in committee. MACC testified in favor of that bill, which would make it easier for conservation commissions to bring court actions to enforce their orders and collect fines. Similarly, Senate Bill 402 and House Bill 623 remain in committee. MACC testified in favor of those identical bills, which would mandate prior disclosure and an open and transparent process of determining whether and how to dispose of or change the use of Article 97 lands, with no net loss of Article 97 land.

Senate Bill 122, which overhauls the state zoning code, also remains in committee. MACC has favored such an overhaul because it would provide options for communities for open space and environmental protection. Nonetheless, MACC opposes the bill as drafted because it would weaken wetlands protections and override local wetland bylaws by implication. MACC has been meeting with bill proponents on substitute wording to correct those serious flaws in the bill.



MACC is a part of the Massachusetts Climate Change Adaptation Coalition (<http://www.massadapt.org/>) that supports two bills that would set a pathway for Massachusetts to establish a comprehensive adaptation management plan in response to climate change, initially filed as Senate Bill 1979 and House Bill 752. The bills passed the Senate with amendments the Coalition supported but the House removed the adaptation planning provisions of the bill. Whether the adaptation planning provisions are restored to that bill or added to another bill will be the subject of legislative activity in the new year.

Executive Order 562

As part of implementing Executive Order 562, issued by Governor Baker in March, state agencies devoted many hours and staff to holding listening sessions during the summer and fall throughout the state. MACC attended listening sessions of Administration & Finance, Energy & Environmental Affairs, and Environmental Protection, commenting on the need to maintain strong wetland protections, and submitting written comments as well. MACC also serves on MA DEP's EO 562 Advisory Committee. Municipalities and private interests have asked for reduced wetland protections and complained about stream crossing standards. As of the writing of this article, there is no indication wetlands or open space protection will be reduced, but the administration has yet to announce its intentions except to explain that the review and implementation process will

Advocacy Update, continued on page 30



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culverts endanger roadways and precipitate flooding, my intent is to determine whether the use of one atlas versus the other is purely academic, or whether MassDEP's reliance on antiquated data is a danger to public and private infrastructure.

Table 1 below compares 24-hour Massachusetts storm events for Worcester using the 1961 TP-40 data and the new Atlas 14 data. (Note that precipitation amounts vary throughout the state by as much as 0.6"; Worcester is used simply as a median example.)

Table 1. 24-Hour Precipitation for 25-, 50- and 100-Year Events, Worcester

<u>Source</u>	<u>25-Year</u>	<u>50-Year</u>	<u>100-Year</u>
TP-40	5.3"	6.0"	6.4"
NOAA Atlas 14	5.96"	6.78"	7.6"
% Difference	+ 11	+12	+16

Although the percent difference between the two atlases is significant - particularly comparing the 100-year storm - note that designers typically use either a 25- or 50-year design storm for culverts and storm sewers. For those smaller storms, the differences are between 11-12%, respectively. Typically, 100-year events are used when designing basin outlets, flood elevations, and structures in rivers and streams. For that larger storm differences can be as great as 25%.

Table 2 below illustrates the amount of flow a pipe of a given diameter can handle. The following design assumptions are made: all pipes have a 1% slope and a friction coefficient of 0.013. (Note: This table does *not* compare the rainfall atlases. It simply analyzes the capacity in cubic feet per second (cfs) of a given pipe flowing full. This intermediate step is necessary to be able to compare required pipe sizes once a more complicated watershed analysis is conducted.)

Table 2. Pipe Capacity Flowing Full (cfs)

<u>Pipe Diameter</u>	<u>Discharge</u>
18"	10.5
24"	22.62
30"	41.01
36"	66.69

Calculating Street Culverts

Once the capacity of various pipe sizes is determined, storm flow is calculated in order to select an appropriate culvert. This workflow is typical of one used by hydrologists to size pipes. In this example identical site data is used, changing only the precipitation amount based on the two atlases. (The following design assumptions are made: the site is square with an area of 20 acres; the average slope on site is 5%; the soil permeability factor or Cn is 60; the time of con-

centration (Tc) is 14.7; the computer time interval is six minutes; and the storm type is III.)

Table 3. Peak Flows from a 20 Acre Site (in cfs)

<u>Event</u>	<u>TP-40</u>	<u>Atlas 14</u>
25-Year	21.75	26.76
50-Year	29.16	41.22
100-Year	34.74	52.80

Using the data in Table 3, pipe sizes can then be determined by referring to Table 2. For instance, if a designer is using precipitation values from TP-40, and a town requires a 25-year storm, the flows from the site dictate use of a 24-inch pipe. In comparison, if one uses precipitation values from Atlas 14, the flows from the site for the 25-year storm dictate use of a 30-inch pipe. Table 4 below illustrates these differences.

Table 4. Pipe Sizes Based on TP-40 versus Atlas 14

(Based upon data from Tables 2 and 3)

<u>Storm Event</u>	<u>Pipe Size Required</u>	
	<u>TP-40</u>	<u>Atlas 14</u>
25-Year	24"	30"
50-Year	30"	36"
100-Year	30"	36"

In summary, use of TP-40 generates smaller pipe sizes than Atlas 14. The pipe diameters differ by up to 20%. This is not a dramatic difference, but it is large enough in small storm events to drive stormwater above the pipe elevations, rather than through the pipe as intended. When this occurs, slope erosion and scouring from increased velocities result. Under even larger storm events, the pipe may be blown out, collapsing roads and other infrastructure. As an aside, if the site were 40 acres instead of 20, flows would double if all other factors remained the same. **The larger the site, the larger the difference in flows between the two atlases, and similarly, the larger the precipitation event, the larger the differences between the two.**

Calculating Stream Crossings

Tables 2 through 4 are only based on small watershed areas and further, assume a designer is calculating street culverts using 25- or 50-year storm events. What if an engineer sizes a structure for a new roadway that crosses a stream? Larger watersheds are typically encountered when designing culverts or similar structures for stream crossings. Do pipe size differences generated between the two atlases become more extreme? If so, the potential for failure increases.

To compare pipe sizes for larger sites, I have used a watershed of 125 acres (less than 25% of a square mile), assuming that a culvert is to be placed in an intermittent stream. The regulatory design mandate, in addition to requirements in the MassDEP River and Stream Crossing Standards, is to ensure that the pipe is sufficiently large to carry flows from

a 100-year storm. Table 5 illustrates pipe size differences comparing the two atlases.

Table 5. Pipe Sizes, TP-40 versus Atlas 14, 100-Year Storm

<u>Source</u>	<u>Peak Flow (cfs)</u>	<u>Pipe Size Required</u>
TP-40	217.10	60 inch
Atlas 14	330.00	72 inch

Use of Atlas 14 dictates a pipe 20% greater in diameter than the pipe sized using TP-40. A 100-year storm in this small watershed will cause a new pipe, if sized using on TP-40 data, to overtop. Given the increased velocity and volumes associated with a larger storm event, such overtopping may result in damage to infrastructure.

Conclusions

An apocryphal Chinese curse states, "May you live in interesting times." The global climate has been far from stable during the last fifty years, and the climate of the northeastern United States in many ways mirrors changes worldwide. GCMs uniformly predict that the severity of extreme events will manifest in the coming decades in greater storm intensities and volumes. Scientists and researchers throughout the country confirm these findings. A decade ago there were pointed collegial disagreements about predictions; today there is virtual unanimity among international and regional experts.

Given the magnitude of climate change in our region, designers should make every effort to ensure that stormwater structures are designed based on the most probable maximum storm events. A few years ago *CE News*, a national professional magazine for civil engineers, highlighted the Keene, New Hampshire storm event, as did other publications. Yet, despite years of such reports, many Massachusetts designers continue to use the 1961 TP-40 atlas and defend their use based on the MassDEP regulations. Worse, under appeal MassDEP may not approve any project that does not use TP-40. Both the *Hydrology Handbook for Conservation Commissioners* and the *Stormwater Handbook* should be revised to allow a designer to use best professional judgment regarding applicable, contemporary data.

MassDEP is currently evaluating the new precipitation data. I spoke to Lealdon Langley, Director, Wetlands and Waterways Program at MassDEP, in mid December of 2015. He noted that adoption of new rainfall data, if it occurs, would require a reg change and projected that the process of evaluation could take a year or more. MassDEP has posted a document on their website confirming this. Importantly, that document states, "In the interim, TP 40 values should continue to be used for calculating stormwater peak runoff rates unless an applicant voluntarily chooses to use the NOAA or NRCC Atlases and the selected methodology has a higher precipitation value than that of TP40 for the geographic location being evaluated." [Emphasis added.]



Culverts and other stormwater devices, if sized based on TP-40 data, are almost always under-designed for all but the smallest watersheds. It is past time for engineers to use the latest precipitation information for design criteria. Reliance on obsolete data endangers the very public they are supposed to protect.

Editor's Note: A workshop on this topic will be presented at Annual Environmental Conference 2016.

References

- CE News, December 2005. *Researchers Predict Dramatic Climate Changes and Infrastructure Failures.*
- Garner, Patrick, June 2006. *Intensification of the Water Cycle and Its Effects on the Design of Culverts*, AMWS Newsletter.
- MassDEP, 1997. *Stormwater Handbook.*
- MassDEP, March 2001. *Hydrology Handbook for Conservation Commissioners.*
- NASA Earth Observatory, October 2005. *Climate Change Will Stress Stormwater Drainage Systems.* [Also see the March 2006 *Journal of Hydrology* for full report.]
- NASA Earth Observatory, March 2006. *Century of Data Shows Intensification of Water Cycle.*
- NOAA Hydrometeorological Design Studies Center. *NOAA Atlas 14*, September 2015.
- NOAA Hydrometeorological Design Studies Center *Quarterly Progress Report*, 1 July to 30 September, 2015.
- U.S. Dept. of Commerce, 1961. Weather Bureau. Technical Paper No. 40. *Rainfall Frequency Atlas of the United States.*
- Wake, C. Climate Change Research Center, UNH, 2005. *Indicators of Climate Change in the Northeast 2005.*
- Wilkes, D. & Cember, R. Cornell University, Sept 1993. *Northeast Regional Climate Center. Atlas of Precipitation Extremes for the Northeastern United States and Southeastern Canada.*
- Patrick Garner, a past AMWS and MACC president, is a principal with Patrick Garner Co., and has written extensively about hydrology and extreme precipitation. Contact: patrickgarner@me.com*

Here are the Latest “Rock Stars” of Land Conservation

By MACC Intern Dana B. Vesty

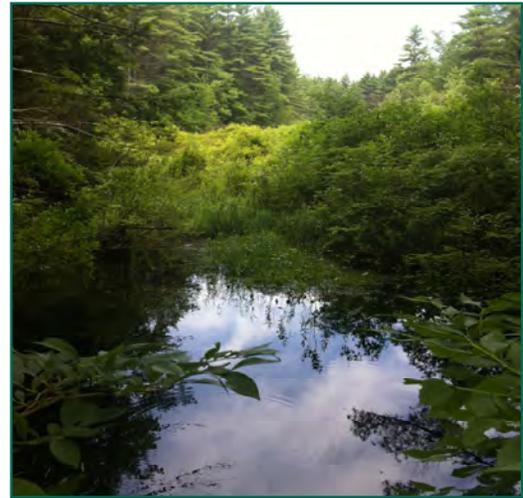
Conservation commissions were founded to conserve and protect communities' dwindling natural resources with land conservation starring as a major element of that original mission. The following stories are from conservation commissions that are “rocking it” with their land conservation projects by creatively protecting land and making it more accessible to the community.

Westminster Conservation Commission: Whitmanville Farm

Four generations of the Jarvenpaa family have worked the land of Whitmanville Farm, through timber harvesting, haying, and running a fishery. Several years ago, the land was protected from development with a conservation restriction in a forest legacy conservation project. It was a collaborative effort with a partnership of the state, Westminster Conservation Commission, North Country Land and Mount Grace Land Conservation Trusts, and the Jarvenpaa family. Located next to High Ridge Wildlife Management Area and Muddy Pond Conservation Area, the farm now contributes to Westminster's continuous conservation area. The conservation restriction allows the family to work the land by dividing the farm into five different parcels with different functionality on each, such as harvesting hay and timber, with future plans for solar panels, and sheep on another section. The open space goals of the Westminster Conservation Commission have been met by the acquisition of Whitmanville Farm. This story showcases Westminster Conservation Commission's rock star collaboration and partnership abilities. When critical pieces of land become available, partnerships and collaborations are key for building relationships and allowing more funding options for the project. Through partnerships with land trusts, the goal is for the conservation commission to hold the conservation restrictions and take long-term responsibility for the project.

Athol: South Athol Conservation Area

South Athol Conservation Area consists of approximately 200 acres of land conveyed to the town by the Stoddard and Leblanc families with the help of the Athol Conservation Commission, North Quabbin Regional Landscape Partnership and Mount Grace Land Conservation Trust. The land is ecologically and historically important, containing part of the historic Rabbit Run railroad of the 1800's, trails, and wetlands. The conservation commission plans to create new trails with the help of volunteers and existing partnerships. In addition, there is an outreach plan to encourage the community to enjoy the new resource. Events are still in the preliminary planning stage; however, these exciting and creative plans include guided nature walks with the assistance of Athol Bird and Nature Club, as



The South Athol Conservation Area, Athol
Courtesy of Sarah Wells

well as guided snowshoe hikes in the winter. The Athol Conservation Commission has excelled at increasing community involvement opportunities and making the land more accessible to the public, earning them their rock star status.

Gardner Conservation Commission: Multiple Conservation Areas



Pair of Wood Ducks at Parker Pond, Gardner
Courtesy of Linda Shea

In the early 2000's, a land swap between the Gardner Conservation Commission and the Greater Gardner Industrial Foundation helped protect 130 acres of wetland, watershed and forested lands located in Hubbardston, Templeton and Gardner. The Otter River Conservation Area consists of several smaller parcels meticulously pieced together over years to preserve this critical wetland complex. Jeff Legros, Conservation Agent for the City of Gardner, attributes the success to the multitude of people over the years that shared a vision and recognized the importance of protecting the wetland complex.

Plans for the Otter River Conservation Area continue to develop. A goal is to increase accessibility to the river by establishing a put-in site for the Otter River Blue Trail. The partnership with the Miller River Watershed Council has been crucial for this project, which includes constructing a kiosk and signage for the area. The conservation commission is also working with the Department of Public Works to construct an access road. In addition, the Massachusetts Division of Fish and Wildlife has identified the conservation area as ideal wood duck habitat and is working with the Boy Scouts and local abutting landowners to install habitat boxes and monitor the population. The conservation commission hopes to join the wood duck box effort in the future.



Otter River Conservation Area, Gardner
Courtesy City of Gardner

Farther down the river, in Cumming's Otter River Conservation Area, plans for a rural take-out site are also in the making. (Rural take-outs don't have access roads.) The addition of 120 acres to a conservation area in 2012 was accomplished in a partnership among the conservation commission, the USDA Forest Service: Forest Legacy Program, the Executive Office of Energy and Environmental Affairs Division of Conservation Services, Drinking Water Supply Protection Grant Program, North County Land Trust, and City of Gardner Water Department. Connected by the river with the canoe and kayak "Blue Trail" to the Otter River Conservation Area, the land provides continuous habitat and further protection of the Otter River. Furthermore, the glacial eskers (ridgelines), wetlands and forests within the conservation area offer recreational and educational opportunities, as well as ecological benefits. The long-term plan is to create an interpretative trail focusing on the industrial, geologic and cultural history of the property. The conservation commission is actively looking for partnerships with the Boy and Girl Scouts, local stewards and people interested in conservation. The North County Land Trust has shown interest in leading hikes once the trail is completed. The take away from these stories is how the Gardner Conservation Commission acquires the land and proceeds to develop partnerships to make it more accessible to the community.

A few years ago, Eagle Scout Kyle Strom partnered with the Mount Grace Conservation Land Trust, Heywood Hospital, and North Central Pathway to construct a new loop off the North Central Pathway Bike Trail, which runs through part of the city forest along Crystal Lake shoreline. Now the entrance of the Wellness Trail is marked with gardens, revealing a pleasant trail accessible to hospital patients, staff and the general public. This project provided opportunities for the public, specifically college students learning plant identification. It's an excellent example of combining health, education, community and conservation to preserve a community's overall wellness.

The city of Gardner hopes to conserve more land connecting to existing parcels in the near future by partnering with private landowners, the Town of Winchendon, Mass Division of Fish and Game, Mount Grace Land Trust, and North County Land Trust. Parcel selection focuses on connectivity to existing protected land, water supply protection, recreational and education opportunities, and native biodiversity, with an emphasis on overall wellness opportunities for the community.

There is no one-size-fits-all template for land conservation. Each conservation project is site-specific, where the conservation commissions help find the best solution for all participants. By having many options for collaboration and partnerships and a bit of creativity, conservation commissions can work towards the original mission of conserving land. As Jeff Legros asserts, "I think any successful conservation project requires first, Partnerships, Patience, and Persistence, for planning; then Collaboration, Communication, and Creativity to see it through to completion." By understanding the community's needs and collaborating, these conservation commissions have earned their land conservation rock star status.

Share your successful land conservation stories by emailing staff@maccweb.org. A special thanks to Jaimee Briggs (Athol), Jeff Legros (City of Gardner), and Dan Bartkus (Westminster) for sharing their commission's success stories. Thank you to Cynthia Henshaw for sharing her perspective as the Executive Director at the East Quabbin Land Trust.



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Continued from page 9, How Conservation Commissions...

- Projects that reduce the natural vegetation and pervious areas in the coastal floodplain may reduce the surfaces that can detain, absorb, slow, or evaporate waters, thereby changing the drainage characteristics in a manner that could cause increased flood damage on adjacent properties.
- Filling in areas that are hydraulically restricted and where ponding occurs from overwash could displace the flood waters that would otherwise be confined or detained and increase flood levels on the subject and adjacent properties (see Photograph 1).
- Buildings on solid foundations or slabs or placing impervious surfaces in the floodplain for parking or other uses may have the effect of channeling flood waters, which a higher velocity of flow to adjacent areas than natural materials do (see Photograph 2).
- Buildings with solid foundations and fill in flood zones may deflect, reflect, or redirect wave energy, over wash, and flood waters, channeling more water flowing at higher velocities onto adjacent resource areas, properties, and private and public roads (Photograph 2).
- Dredging or the removal of materials within the coastal floodplain allows storm waves to break farther inland and to impact upland and wetland resource areas.

Land Subject to Coastal Storm Flowage with Ability to Detain and Slow Flood Waters



Photograph 1. Land subject to coastal storm flowage (and altered dune) with ability to detain and slow flood waters. Here, the entire area (consisting of gravel, portions of asphalt, and vegetation) has the ability to retain, collect, absorb, and slow water as evidenced by the extensive pool of storm wave overwash and flood waters that collected after a storm event. If this area were to be developed with solid foundation walls, filled, or paved, the ability of the land to detain and slow the flood waters would be severely diminished, ultimately affecting adjacent properties. The photograph was taken looking toward the ocean (in distance).

Land Subject To Coastal Storm Flowage with Diminished Ability to Slow Flood Waters or Reduce Storm Wave Overwash



Photograph 2. Land subject to coastal storm flowage with diminished ability to slow flood waters or reduce storm-wave overwash. The solid foundations and pavement in this area of land subject to coastal storm flowage has led to an increased velocity of storm wave overwash and a channeling of flood waters toward landward areas. In this picture, the ocean is behind the houses (that are on a developed and altered dune). In such an area where the dune has lost most of its function to exchange sediment with the beach and dissipate wave energy, it is all the more important to protect the functions of land subject to coastal storm flowage. Photograph courtesy of Margo Clerkin, former Hull Conservation Agent.

For more information on this topic, please come to the workshop on LSCSF at the MACC Annual Environmental Conference on March 5, 2016. MassDEP and CZM are also working to finalize a guidance document to help coastal conservation commissions evaluate projects proposed in coastal resource areas for the potential to impact the storm damage prevention and flood control interests of the WPA. This guidance document will contain additional detail for evaluating projects in LSCSF.

Lealdon Langley is Director of Wetlands and Waterways Program, MassDEP. Rebecca Haney is a Coastal Geologist at Mass Office of Coastal Zone Management.

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Tips from the Conservation Office

This column provides tools you can use to help make conservation office administration run more smoothly and effectively.

By Cynthia O'Connell

STORMWATER MANAGEMENT RESOURCES

The conservation commissions in many of the communities in Massachusetts also administer local stormwater management by-laws. For those of us who are not trained as civil engineers, reviewing the details of stormwater designs can be a daunting prospect. I have compiled a list of the resources that I utilize whenever I have questions about stormwater management.

Massachusetts Stormwater Handbook, Volumes 1 & 2, Mass DEP, February 2008

www.tinyurl.com/MAstormwaterhandbook

This document was prepared by DEP in 2008 and is the primary guidance document for Best Management Practices. The handbook provides detailed explanations for each of the stormwater standards. Volume 2 is especially useful in that it includes specific details and maintenance requirements for each BMP, along with information that assists in the decision making regarding which treatment option would be the most effective in a specific circumstance. Although the standards in the handbook are generally applicable only to projects within wetland jurisdiction, most local stormwater by-laws also reference this document.

Hydrology Handbook for Conservation Commissioners, Mass DEP, Division of Watershed Management, Wetlands and Waterways Program, March 2002

www.tinyurl.com/hydrologyhandbook

This handbook was prepared prior to the issuance of the *Stormwater Handbook* and was meant to assist conservation commissioners in understanding how hydrologic and hydraulic calculations are prepared and how these calculations conform to the Wetlands Protection Act. It includes a great deal of technical information, including appendices related to rainfall data and the various methodologies used to prepare drainage calculations.

University of New Hampshire Stormwater Center

www.unh.edu/unhsc/

The UNH Stormwater Center has been studying the effectiveness of specific Best Management Practices since its inception in 2004. The Center has constructed a series of BMPs in its test area on the Durham campus where each system is tested on a regular basis. The site is designed to allow direct, side-by-side comparison of different technologies. To date, the research facility has collected detailed

performance data on over 80 storms and has evaluated over 30 different types of stormwater treatment systems. The Center holds regular workshops on the design and maintenance of BMPs at their facility in Durham, New Hampshire and provides technical publications which are available on its website (see above).

Watershed Associations

Local watershed associations often have staff with expertise in stormwater management who may assist in the review of projects related to a specific watershed. This technical assistance can be invaluable in cases, such as Massachusetts Department of Transportation projects, where peer review funding is not available. The water quality of many of the surface waters in Eastern Massachusetts have been identified by the EPA as being compromised by specific pollutants and have had Total Maximum Daily Load documents published. The communities within the watersheds of these rivers are obliged to make quantifiable efforts to improve the quality of the stormwater being discharged from their municipal separate storm sewer systems (MS4). The watershed associations are watchdog groups who have an overall understanding of their particular water body. Most watershed organizations can be found at www.tinyurl.com/watershedcontacts.

BayState Roads

<http://baystateroads.eot.state.ma.us>

Bay State Roads is another training organization, primarily geared to Departments of Public Works, that holds frequent workshops on many topics of interest, including stormwater management. I would expect to see their offerings to increase once the EPA issues its new MS4.

Association of Massachusetts Wetland Scientists

This organization holds frequent workshops on topics of interest to conservation commissions, including stormwater management. To learn more, visit <http://amws.org/>

Cynthia O'Connell, RLA, ASLA is the Town of Canton Conservation Agent and a MACC Director.

Editor's Note: MACC will be developing a stormwater management unit for the Fundamentals for Conservation Commissioners certificate training program. Look for it in 2016.

The Community Preservation Act: What Your Conservation Commission Needs to Know

By the CPA Coalition

How much do you know about the Community Preservation Act (CPA)? Has your conservation commission struggled to find funding for important open space acquisitions? If so, you may want to learn more about CPA, and consider initiating, or assisting with, a local campaign to adopt CPA in your community!

This article will provide you with some basic information on CPA and how to adopt it, as well as ways the Community Preservation Coalition can help. Finally, it will discuss how CPA helps adopting communities preserve open space. Read on to learn more about how this successful local-state partnership has made tremendous gains preserving important land resources statewide.

What is the Community Preservation Act?

The Community Preservation Act (M.G.L. Chapter 44B -“CPA” or “the Act”) is state enabling legislation allowing Massachusetts cities and towns to create a local, dedicated fund for open space, historic preservation, community housing, and outdoor recreation projects. Communities that adopt the Act also receive funds from the statewide Community Preservation Trust Fund each year to help fund these local projects.

CPA funds are generated through two sources: a voter-approved surcharge of up to 3 percent on local property tax bills, and an annual disbursement from the statewide Community Preservation Trust Fund, which distributes funds each fall to communities that have adopted CPA. The Trust Fund's revenues are derived from document recording fees collected at the Registry of Deeds and from state budget surplus funds.

Over the 15-year history of the program, communities have received matching disbursements from the statewide Community Preservation Trust Fund ranging from 26% to 100% of locally raised CPA funds; the base percentage match statewide for the November 2015 disbursement was 29.7%.

As of December of 2015, 160 cities and towns had passed CPA, or 45% of the state's communities. Over 23,000 acres of open space have been preserved with the benefit of CPA funds since the program's start.

How does a community adopt CPA?

A municipality adopts CPA through passage of the CPA ballot question at the voting booth. There are two ways that the question to adopt CPA can be placed on the ballot. The



first method, used by roughly two-thirds of the current CPA communities, is a vote by the municipality's legislative body (Town Meeting or City or Town Council) to put the CPA adoption question on the ballot. The second method requires a petition to be signed by at least 5 percent of the community's registered voters, requesting that the CPA question be placed on the ballot. In either case, CPA must subsequently be approved by a simple majority of the voters in the community. More detailed information on the process can be found at: <http://www.communitypreservation.org/content/adoption-overview> and also at <http://www.sec.state.ma.us/ele/electcpa/cpaidx.htm>.

How can the Coalition help?

If you're interested in exploring CPA for your community, your first step should be to call the Community Preservation Coalition (617-367-8998 or www.communitypreservation.org)! This nonprofit organization has been in existence since the CPA was passed, and is dedicated to helping Massachusetts communities understand, adopt, and implement the CPA. The Coalition has assisted in hundreds of CPA campaigns since 2000, and can help local advocates develop a CPA campaign strategy and provide sample campaign materials and ballot language. It can also provide CPA revenue projections and cost to the average taxpayer; this information will help your community decide what CPA surcharge level to choose, and which CPA of four optional CPA exemptions to offer.

Ways CPA can help preserve open space in your community

Under CPA, “Open space” is defined as follows:

“Open space,” shall include, but not be limited to, land to protect existing and future well fields, aquifers and recharge areas, watershed land, agricultural land, grasslands, fields,

forest land, fresh and salt water marshes and other wetlands, ocean, river, stream, lake and pond frontage, beaches, dunes and other coastal lands, lands to protect scenic vistas, land for wildlife or nature preserve and land for recreational use. (M.G.L. Chapter 44B, Section 2)

CPA funds can be used to acquire open space outright, as well as to acquire conservation restrictions and agricultural preservation restrictions (APRs) on land. CPA funds can be used alone, or also in combination with other state and federal grants, privately raised funds, and donations; it can serve as the community's required local match in the case of state grant programs requiring the community to put up some funds first in order to be eligible for the grant program. Having CPA funds on hand allows communities to react quickly when an opportunity to acquire land comes up, as well as to plan for open space purchases in the future. CPA funds can be transferred by the local legislative body to a community's Conservation Fund, allowing land acquisitions to move forward even if no Town Meeting is scheduled for some time (the CPA rules follow the CPA funds into the community's Conservation Fund). Finally, communities can bond against anticipated local CPA revenues (though not against CPA state match revenues) for larger purchases where current revenue isn't sufficient.

When open space is acquired with CPA funds, a permanent deed restriction, in the form of a separate instrument, must be placed on the property, limiting its use for the CPA purpose for which it was acquired. A third party must hold and monitor this restriction, and CPA funds can pay for monitoring costs charged by the organization holding the restriction.

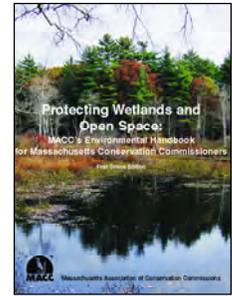
CPA funds can also help pay for costs associated with undertaking an open space purchase, such as title searches, surveys, and appraisals. Similarly, they can pay for the costs associated with placing the required permanent restrictions on the acquired properties.

CPA is truly worthwhile to consider if your community wants to have a steady source of funds available to protect the valuable natural resources in your community! If you have questions, don't hesitate to contact Community Preservation Coalition staff at 617-367-8998 or at: <http://www.communitypreservation.org/content/contact-us>



Environmental Handbook Tips for Success

Editor's note: This is the second of a series of articles on how to get the most from Protecting Wetlands and Open Space: MACC's Environmental Handbook for Massachusetts Conservation Commissioners



Are you one of those people who makes notes on the margin of a book page? Maybe you write your notes in pencil or pen, or whichever you have available. Maybe you write a note in the margin as a reminder for the next time you are on the page or maybe you jot down a thought that came to you as you were reading the page. Perhaps you use a sticky note instead of writing on the book itself.

The *Environmental Handbook* allows you to write and keep notes on the margin of any page in the book. In electrons.

In the left margin of each *Environmental Handbook* page is a box labeled, Page Notes. Click on the Page Notes box and the Page Notes pop-up window will open. You will see a place to write and save a note on that page. When you save the note, it will be there for you until you delete it. The next time you go to the page, there will be a number in the Page Notes box showing how many notes you have on that page. Click on the Page Notes box to open the pop-up window and read the notes. In the pop-up window you can also edit or delete the notes you made and you can add more notes to the page. The notes are personal to your *Environmental Handbook* account; no holder of any other account can see them or even know you have them.

There is one more tip about page notes. Click on the red x at the top right of the Page Notes pop-up window to close the pop-up window.

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Fundamentals for Conservation Commissioners

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Unit 102 - The Wetlands Protection Act: Fundamentals, Process and Procedures

Wednesday, January 27, 2016 • 6:00 p.m. - 8:30 p.m. • Check-in: 5:45 p.m.

Unit 104 - Wetland Functions and Values

Monday, February 8, 2016 • 5:45 p.m. - 8:30 p.m. • Check-in: 5:30 p.m.

Unit 203 - Open Space Planning and Protection Techniques

Thursday, February 11, 2016 • 6:00 p.m. - 8:30 p.m. • Check-in: 5:45 p.m.

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Please include your payment and send to MACC, 10 Juniper Road, Belmont, MA 02478. Membership fee applies to MACC members including conservation commissioners when member dues are paid. Cancellation must be received in writing (mail, fax, email) at least 4 business days prior to session. No refund or credit for less than 4 business days notice. A \$20 processing fee will be charged for cancellation. Instructions to access the webinar will be emailed upon receipt of registration.

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Nominations for MACC Officers and Board of Directors

MACC's Nominating Committee has voted to present the following slate of officer and board nominees and non-board members of the next Nominating Committee to the membership at the Annual Meeting, to take place at Annual Environmental Conference 2016, on Saturday, March 5, 2016, at 8:45 AM, at the College of the Holy Cross, Hogan Campus Center, Worcester, MA.

Officers serving until Annual Meeting 2017:

President:	Jennifer Carlino
First Vice President	Michael Howard
Vice President for Advocacy	Scott Jackson
Vice President for Education	Amy Ball
Secretary	Cynthia O'Connell
Treasurer	John Goldrosen

Directors serving until Annual Meeting 2019:

Kathleen (Kate) Connolly; E. Heidi Ricci; Janice Stone; Matt Schweisberg; Margaret (Peg) Stolfa

Directors serving until Annual Meeting 2018:

Lee Curtis*; Nick Nelson*

Directors serving until Annual Meeting 2017:

Pamela Harvey*

Nominating Committee Non-Board Members serving until Annual Meeting 2017:

Michele Grzenda; Tim Purinton; Kathy Sferra; Seth Wilkinson

*designates a new member of the Board of Directors

The following members of the Board of Directors are not up for election this year: serving until Annual Meeting 2017: Richard Drury; Brandon Faneuf; and Jennifer Steel; serving until Annual Meeting 2018: Marc Bergeron; Rebekah Lacey; and Gregor McGregor

Presented by the 2015 Nominating Committee: Board members Scott Jackson (chair); Jennifer Carlino; and Brandon Faneuf; and non-board members Michele Grzenda; Ingeborg Hegemann; Nathaniel Stevens; and Seth Wilkinson

Help Protect Wetlands and Open Space - At Work!



The **Massachusetts Association of Conservation Commissions (MACC)** is a member of EarthShare, a nationwide federation of the country's most respected environmental and conservation charities. To find out more about how you and your workplace can support **MACC** through an EarthShare New England charitable giving campaign, please contact Jessica Wozniak at info@earthsharenengland.org. You can also visit EarthShare New England's web site at www.earthsharenengland.org.

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Continued from page 19, Advocacy Update

extend beyond the March deadline set forth in the Executive Order. Visit MACC's EO 562 webpage for more details and to read MACC's comments: (http://maccweb.org/advocacy_action.html)

Gas Pipeline

This fall saw much activity for Kinder Morgan's proposed Northeast Energy Direct natural gas pipeline, with public hearings, the beginning of National Environmental Policy Act (NEPA) review, and Kinder Morgan's formal filing of its application with the Federal Energy Regulatory Commission (FERC). The application notes Kinder Morgan would file with conservation commissions during 2016, raising the question of why it would do so before receiving FERC approval of the project or the route it prefers.

FERC established a deadline of January 6, 2016, for filing motions to intervene in the proceeding. It also required Kinder Morgan to evaluate seriously two alternative routes that the company had rejected: a route along the MassPike, and a route along Route 2. Kinder Morgan's evaluation of those alternatives is due December 31, 2015. Whether those routes become real alternatives or are preferable to Kinder Morgan's chosen route should become clearer as the NEPA and FERC processes continue.

MACC attended NEPA scoping sessions, where many people raised numerous concerns about the pipeline. In October, MACC filed NEPA scoping comments (<http://maccweb.org/documents/MACC%20NEPA%20Scoping%20Comments%20re%20NED.pdf>) with FERC. Later in the fall, the Massachusetts Attorney General released a report showing the pipeline is unnecessary.

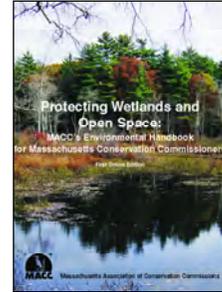
Kinder Morgan, with all its reported financial problems and with contracts for only about half the capacity of the proposed pipeline, has shown no indication of pulling back.



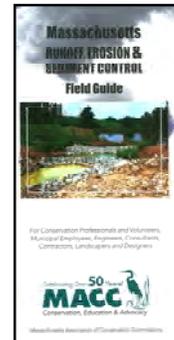
Essential Resources for Conservation Commissions

Purchase can be made at www.maccweb.org

Protecting Wetlands and Open Space: MACC's Environmental Handbook for Massachusetts Conservation Commissioners



Runoff, Erosion & Sediment Control Field Guide



Wetlands Protection Act Brochure

